WHAT IS CLAIMED:

1. A polishing slurry composition for polishing a semiconductor substrate having at least one of a metal film, a shallow trench isolation film, or a dielectric film, said slurry composition comprising: a metal oxide particle, at least one water-soluble organic polymer, and water, said slurry composition characterized in that when the substrate is polished by contacting the substrate with the slurry composition disposed between the substrate and a polishing pad moving relative to the substrate, it exhibits a peak when measuring the substrate removal rate compared with the relative movment pad relative to the substrate while maintaining a constant polishing pressure between the polishing pad and the substrate.

2. The polishing slurry composition according to claim 1, wherein said constant polishing pressure is from 1psi (6.9kPa) to 9psi (62.1kPa) and said polishing pad is provided on a rotatable platen and wherein the peak in the substrate removal rate versus polishing pad-substrate movement rate curve peak is found within a pad rotation rate of from 12rpm to 150rpm.

3. The polishing slurry composition according to claim 1 or 2, wherein the slurry composition comprises a plurality of water-soluble organic polymers, wherein the water-soluble organic polymers each have an average molecular weight, and wherein at least one lighter water-soluble organic polymer has an average molecular weight that is between 15% to 95% of the average molecular weight of another, heavier, water-soluble organic polymer.

4. The polishing slurry composition according to claim 3 wherein the weight ratio of the heavier water-soluble organic polymer to the lighter water-soluble organic polymer is from 95:5 to 5:95.

5. The polishing slurry composition according to any one of claims 1 to 4, wherein at least one of said water-soluble organic polymer(s) is a polyacrylic acid salt.

6. The polishing slurry composition according to any one of claims 1 to 5, wherein at least one of said water-soluble organic polymer(s) is a polyvinyl alcohol.

7. The polishing slurry composition according to any one of claims 1 to 6, wherein at least one of said water-soluble organic polymer(s) is a polyethylene oxide, a polyethylene

glycol, an alginic acid, guar gum, a carboxylmethylcellulose, a hydroxymethylcellulose, or salts thereof, or combinations thereof

8. The polishing slurry composition according to any one of claims 1 to 7, wherein the content of said water-soluble organic polymer(s) is 0.01 % by weight to 3% by weight based on the total amount of the composition.

9. The polishing slurry composition according to any one of claims 1 to 7, wherein the content of said water-soluble organic polymer(s) is 0.05 % by weight to 1.5% by weight based on the total amount of the composition.

10. The polishing slurry composition according to any one of claims 1 to 9, wherein said metal oxide particle comprises ceria having an average particle diameter, wherein the average particle diameter of said ceria is 0.03μm to 0.5μm, and the solid content of said metal oxide particles in the slurry composition is 0.1% by weight to 20% by weight based on the total amount of the composition.

11. The polishing slurry composition according to any one of claims 1 to 9, wherein said metal oxide particle comprises silica having an average particle diameter, wherein the average particle diameter of said silica is 0.03μm to 0.5μm, and the solid content of said metal oxide particles in the slurry composition is 0.1% by weight to 20% by weight based on the total amount of the composition.

12. The polishing slurry composition according to any one of claims 1 to 9, wherein said metal oxide particle comprises alumina having an average particle diameter, wherein the average particle diameter of said alumina is 0.03μm to 0.5μm, and the solid content of said metal oxide particles in the slurry composition is 0.1% by weight to 20% by weight based on the total amount of the composition.

13. A method of polishing a semiconductor substrate, which comprises: providing a substrate; providing a polishing slurry composition according to any one of claims 1 to 12, wherein said polishing slurry composition is disposed between the substrate and a polishing pad; holding a portion of the pad and the substrate in a position to create a polishing pressure; and moving at least one of the polishing pad or substrate to obtain a relative movement rate between the polishing pad and the substrate, thereby polishing a semiconductor substrate.

14. The method of polishing a semiconductor substrate of claim 13, wherein the relative movement rate between the polishing pad and the substrate is within 30% of the relative movement rate that provides the peak substrate removal rate at said polishing pressure.

15. The method of polishing a semiconductor substrate of claim 13, wherein the relative movement rate between the polishing pad and the substrate is within 15% of the relative movement rate that provides the peak substrate removal rate at said polishing pressure.

16. The method of polishing a semiconductor substrate of claim 13, wherein the relative movement rate between the polishing pad and the substrate is the relative movement rate that provides the peak substrate removal rate at said polishing pressure.

17. The method of polishing a semiconductor substrate of claim 13, wherein the relative movement rate between the polishing pad and the substrate varies, and wherein an average relative movement rate between the polishing pad and the substrate is within 30% of the relative movement rate that provides the peak substrate removal rate at said polishing pressure.

18. The method of polishing a semiconductor substrate of claim 13, wherein the relative movement rate between the polishing pad and the substrate varies, and wherein an average relative movement rate between the polishing pad and the substrate is within 15% of the relative movement rate that provides the peak substrate removal rate at said polishing pressure.

19. The method of polishing a semiconductor substrate of any of claims 13 to 18, wherein the polishing step comprising a first planarization step and a final polishing step, wherein a polishing slurry composition according to any one of claims 1 to 12 is used in both the first planarization step and the final polishing step.

20. The method according to claim 19, wherein the same polishing slurry composition is used in both the planarization step and the final polishing step.

21. The method according to any of claims 19 or 20, wherein the relative movement rate between the polishing pad and the substrate in the planarization step is higher than the relative movement rate between the polishing pad and the substrate in the final polishing step.

22. The method according to any of claims 19 to 21, wherein the polishing pressure in said planarization step is lower than the polishing pressure in said final polishing step, and wherein in both the planarization step and the final polishing step the relative movement rate between the polishing pad and the substrate is within 30% of the relative movement rate that provides the peak substrate removal rate at the polishing pressure.

23. The method according to any of claims 19 to 21, wherein the polishing pressure in said planarization step is lower than the polishing pressure in said final polishing step, and wherein in both the planarization step and the final polishing step the relative movement rate between the polishing pad and the substrate is within 15% of the relative movement rate that provides the peak substrate removal rate at the polishing pressure.

24. The method according to any of claims 19 to 21, wherein the polishing pressure in said planarization step is lower than the polishing pressure in said final polishing step, and wherein in both the planarization step and the final polishing step the relative movement rate between the polishing pad and the substrate is the relative movement rate that provides the peak substrate removal rate at the polishing pressure.

25. The method according to any of claims 19 to 23, wherein the polishing pressure in said planarization step is lower than the polishing pressure in said final polishing step and wherein the relative movement rate between the polishing pad and the substrate in the planarization step is higher than the relative movement rate between the polishing pad and the substrate in the final polishing step.

26. The method according to any one of claims 13 to 25, wherein said semiconductor substrate is a device wafer provided with at least one kind of a film selected from the group consisting of an interlayer dielectric film, a shallow trench isolation film and a metal film.